

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-2. (Canceled)

3. (Previously Presented) A fuel injection valve in which a nozzle hole is formed on a metering plate and fuel flowing on a face on the upstream side of the metering plate is injected outside of a face on the downstream side of the metering plate, the fuel injection valve comprising:

a vortex flow generator means for making a flow of fuel passing in the nozzle hole form into a vortex flow, wherein the vortex flow generator means is provided on the upstream side of the metering plate, wherein the vortex flow generator means is a vortex flow generator groove provided on a face on the upstream side of the metering plate so that the vortex flow generator groove can be connected to a wall face of the inlet of the nozzle hole, a main stream of fuel flowing in the groove is directed to a position deviating from a center of the nozzle hole, and the following relations are established,

$$L \times 1/5 < F < L \times 2/3$$

$$D \times 1/2 < N < D \times 3$$

$$D \times 1/5 < H < D \times 2/3$$

$$D \times 1/5 < B < D \times 1/2,$$

where D is a diameter of the nozzle hole, L is a thickness of the metering plate, F is a depth of the vortex flow generator groove, N is a length of the vortex flow generator groove, H is a width of the vortex flow generator groove, and B is an offset of the center line in the longitudinal direction from the center of the nozzle hole.

4-5. (Canceled)

6. (Previously Presented) A fuel injection valve in which a nozzle hole is formed on a metering plate and fuel flowing on a face on the upstream side of the metering plate is injected outside of a face on the downstream side of the metering plate, the fuel injection valve comprising:

a vortex flow generator means for making a flow of fuel passing in the nozzle hole form into a vortex flow, wherein the vortex flow generator means is provided on the upstream side of the metering plate, wherein the vortex flow generator means is a vortex flow generator groove provided on a face on the upstream side of the metering plate so that the vortex flow generator groove can be connected to a wall face of the inlet of the nozzle hole, a main stream of fuel flowing in the groove is directed to a position deviating from a center of the nozzle hole, and a depth of the vortex flow generator groove is formed to be increased or decreased toward the nozzle hole.

7. (Previously Presented) A fuel injection valve in which a nozzle hole is formed on a metering plate and fuel flowing on a face on the upstream side of the metering plate is injected outside of a face on the downstream side of the metering plate, the fuel injection valve comprising:

a vortex flow generator means for making a flow of fuel passing in the nozzle hole form into a vortex flow, wherein the vortex flow generator means is provided on the upstream side of the metering plate, wherein the vortex flow generator means is a vortex flow generator groove provided on a face on the upstream side of the metering plate so that the vortex flow generator groove can be connected to a wall face of the inlet of the nozzle hole, a main stream of fuel flowing in the groove is directed to a position deviating from a center of the nozzle hole, and the shape of the vortex flow generator groove is a rectangle, a semi-ellipse, a triangle having one vertex on the nozzle hole side, a triangle having one vertex on the end portion side or a comma-shape curved in the direction of revolution of fuel.

8-10. (Canceled)